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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/617,308	07/14/2000	Toshitaka Agano	Q58739	8383

7590 02/12/2004  
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EXAMINER

ABDULSELAM, ABBAS I

ART UNIT PAPER NUMBER

2674

DATE MAILED: 02/12/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/617,308

Applicant(s)

AGANO, TOSHITAKA

Examiner

Abbas I Abdulsalam

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

1. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

*Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (USPN 6392690) and in view of Kaise et al. (USPN 6002459).

Regarding claim 1, Fujii et al. (hereafter to be read as Fujii) teaches an LCD element (1), which is a display element for conducting monochromatic display (col. 7, lines 63-64). Fujii illustrates the LCD element in Fig. 1 and discloses an arrangement of pixels in the LCD element in which pixel groups (11R, 11G 11B) are formed (col. 8, lines 59-60 and Fig. 3). Fujii teaches that each of the image groups (11R, 11G 11B) may be composed of three or more pixels driven in response to their corresponding color signals (col. 9, lines 23-40). Fujii does not disclose displaying the monochromatic image having a higher gradation resolution than reproduction performance of each of the R, G and B cells in the color display device. Kaise et al. (hereafter to be read as Kaise). Kaise teaches micro-lenses that are fixed to monochrome liquid crystal panels

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arranged in corresponding optical paths of B, R and G light so that a higher luminance can be achieved. See col. 11, lines 12-17.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fujii's liquid crystal display system to adapt Kaise's technique of achieving a higher monochromatic luminance. One would have been motivated in view of the suggestion in Kaise that the higher luminance is equivalent to the desired gradation resolution. The use of improved luminance helps function a liquid crystal display system more effectively as taught by Kaise.

Regarding claims 2, and 19, Fujii teaches image groups (11R, 11G, 11B) which may be composed of 3 or more pixels, and discloses that the pixel groups (11R, 11G 11B) are composed of pixels driven in response to a color signal corresponding to Red and green and blue respectively. See col. 9, lines 23-40.

Regarding claim 17, Fujii teaches three dimensional image display device use with medical instruments. Col. 1, lines 12-17.

Claims 3-16, 18 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (USPN 6392690) and in view of kaise et al. (USPN 6002459) Popovich (USPN 6678078).

Regarding claim 10, Fujii in view of Kaise have been discussed. However, Fujii does not teach data allotment by which input data of a monochromatic image is allotted to R, G, and B data. Popovich the other hand teaches that each displayed monochrome frame is illuminated

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with one of the red, blue and green bandwidths outputted, by solid state optical filter (324) which will project red, blue and green lights on the screen (314).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fujji's image display system to adapt Popoviche's technique of projecting red, blue and green lights from a monochrome frame. One would have been motivated in view of the suggestion in Popovich that the projection technique including the use of optical filter (314) equivalently provides the desired data allotment. The use of projection using an optical filter helps function an image display device (312) as taught by Popovich.

Regarding claim 3, Popovich teaches as shown in Fig. 18b, illuminating a monochrome image on display screen (314) with respect to emission of red, green and blue lights. See Fig. 18b.

Regarding claims 4-5 and 11-12, Popovich teaches an optical filter (324) including optical elements (480a-480c) each of which exhibiting maximum diffraction efficiency with respect to blue, red and green bandwidths. See col. 26, lines 60-76.

Regarding claims 6 and 13, Popovich teaches the use of image display control circuits (326) controlling the sequential presentation of the monochrome images on the display screen, and discloses an optical filter control circuit (328) controlling the color output of the optical filter (322). See col. 19, lines 23-35

Regarding claims 7-8, 14-15 and 22-23, Popovich teaches an image in the form of computer graphics, and discloses that an object with three -dimensional coordinates is expressed in through calculation by a computer in two dimensional image data (col. 10, lines 43-52). Popovich illustrates as shown in Fig 7A an image data corresponding to red, green and blue color

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images (col. 10, lines 60-67) in terms of denoted subscripts and coefficient expressions (col. 10, lines 60-67, col. 11, lines 5-37, Fig. 3 and Fig 7).

Regarding claims 9-10, 16 and 19-20, Popovich teaches control circuits (326, 328) communicating with each other such that each of the displayed monochrome images is timely illuminated with the appropriate bandwidth light produced by the optical filter (324). See col. 20, lines 1-9 and Figs 18a-18c.

Regarding claim 18, Fujji teaches three dimensional image display device use with medical instruments. Col. 1, lines 12-17.

Regarding claim 21, Popovich teaches applications of wavelength gratings in various areas such as optical switch for displays and laser optics, and also teaches the applications of electrically switchable transmission gratings in areas including optical switches holographic image storage and retrieval, switchable holographic lenses and etc. see col. 18, lines 30-43 and Fig 17.

### **Conclusion**

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following art is cited for further reference.

U.S. Pat. No. 6,370,278 to Waguri

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4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abdulsalam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

**Any response to this action should be mailed to:**

Commissioner of patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314**

Hand delivered responses should be brought to crustal park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

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February 6, 2004

  
**XIAO WU**  
**PRIMARY EXAMINER**